

# Notice of Allowability

Application No.

10/624,636

Examiner

Craig A. Thompson

Applicant(s)

KOO ET AL.

Art Unit

2813

## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to communication of 7/23/2003.
2. ☒ The allowed claim(s) is/are 1-36.
3. ☒ The drawings filed on 23 July 2003 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☒ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☒ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
  - \* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 7/23/2003
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

### REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance: prior art of record does not describe or suggest applicants' invention set forth in claims 1-8, a crystallization method of an amorphous silicon thin film wherein a black matrix layer is formed to absorb external light on a substrate, an upper region of the black matrix layer having a catalyst for crystallization, the black matrix layer is patterned, amorphous silicon is formed on the substrate and the black matrix layer and thermal processing is carried out for crystallization. Similarly, prior art of record does not describe or suggest the invention of claims 9-16, wherein a black matrix layer is formed, a crystallization thin film is formed having a catalyst for crystallization on the black matrix layer, the black matrix layer and crystallization film are patterned, an amorphous silicon thin film is formed on the substrate and the patterned crystallization thin film, and thermal processing is carried out for processing the amorphous silicon thin film for crystallization.

Prior art of record does not describe or suggest applicants' invention set forth in claims 17-26, a TFT comprising a substrate, a semiconductor active layer having a source and drain regions formed on the substrate wherein the source and drain regions are formed at respective sides of the channel region, at least the channel region is formed as a metal-induced lateral crystallization, and a black matrix layer is interposed between the substrate and at least the source region and the drain region of the semiconductor active layer, wherein the upper region of the black matrix layer includes a catalyst for crystallization. Finally prior art of record does not describe or suggest

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applicants' invention set forth in claims 27-36 a flat panel display comprising an insulating substrate, a pixel region and at least one TFT near the pixel region, wherein the at least one TFT comprises a semiconductor active layer having a channel, source and drain regions wherein at least the channel region is formed as a metal-induced lateral crystallization (MILC) region, a gate dielectric above the channel region, a gate electrode formed on the gate dielectric, and a black matrix layer interposed between the insulating substrate and the gate dielectric layer, the black matrix layer having an opening which exposes at least the channel region between the source region and the drain region of the semiconductor active layer.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Cited Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Suzuki et al. (US Patent No. 6,274,888) teaches a semiconductor device including a TFT and an LCD (abstract and title). One embodiment is taught to employ metal induced lateral crystallization (column 8, line 45 to column 9 line 40). The pixels of another embodiment are taught to employ a black matrix (see column 14, line 38-47 and figure 13).

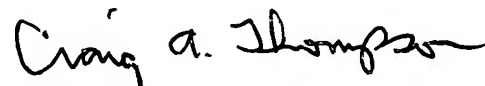
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**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig A. Thompson whose telephone number is (571)272-1699. The examiner can normally be reached on Monday-Friday 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead, Jr. can be reached on (571)272-1702. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Craig A. Thompson  
Primary Examiner  
Art Unit 2813

23 November 2004